Guidelines for Landowners Using Conservation Practices for Conserving Prairie Insects Including Regal Fritillary Butterfly and Prairie Mole Cricket

MISSOURI DEPARTMENT OF CONSERVATION

Introduction
Insects are the dominant life form on earth. Millions may exist in a single acre of land. About one million species have been identified, and there may be as many as ten times that number yet to be discovered. Insects are important to the maintenance of prairie ecosystems. They are responsible for the pollination of prairie plants and also play a role in the nutrient cycling. They consume living and dead vegetation, manure, and dead animals, thereby hastening decomposition. This results in quicker return of carbon and mineral nutrients to the soil where they become available to plants. Insects are also an important food source for a wide variety of prairie animals.

Pollinator guild is the term used to describe the group of species that pollinate a particular plant. Pollinator guilds can be composed of a particular group of organisms, such as bees, or can be a mix of several groups, such as flies and beetles. In the case of prairie plants, knowledge of the members of these pollinator guilds is limited. Even less information is available about how these guilds have changed over time. Reductions in pollinator species numbers can have a negative impact on the reproductive success of a plant species.

Many of the wasps, bees, flies, butterflies and moths that inhabit the prairie are specialized pollinators and responsible for the cross-pollination of prairie plants that would not otherwise reproduce. They pollinate plants such as, coneflowers, sunflowers, and black-eyed Susans. The monarch is one of the most widely distributed of the butterflies. Its larva feeds exclusively on the leaves of milkweed. Meads milkweed has been federally listed as a threatened species. Highlighting the regal fritillary / prairie violet relationship might be more fitting; Monarch are not prairie obligates and their survival doesn't depends on the presence of Mead's.

Reasons for Conversion
Habitat loss due to farm and land development is the major concern for prairie insect preservation. Other concerns include habitat fragmentation, soil disturbance, insecticides, pesticides and improper management activities.

Photo Credit: http://www.inhs.uiuc.edu/~kenr/prairieplants.html

Recommendations
All of the habitat requirements for prairie insects have yet to be discovered. Therefore, insect conservation often involves habitat conservation instead. The proposed idea is to preserve enough of each type of habitat which will allow prairie insects to survive.

- Only by working with landowners can we protect the insects that depend on native prairie remnants. With landowners as partners, protection can come from short-term agreements or long-term easements to save these scattered tracts of prairie. Purchase of some lands may be needed to prevent further loss.

Consult individual species BMPs for additional recommendations and specific beneficial and adverse practices for each species.

Prairie Land Management

- Prescribed burns are an important key element in the maintenance of desirable prairies habitats in Missouri. However, prairie insects, such as the Regal fritillary butterfly or prairie mole cricket cannot thrive where entire prairies are burned at one time. Each of these species require dead

plant litter during their life cycles. Burning will remove plant litter. No more than 1/3 of the prairie where these insects occur should be burned in any one year. Burn timing is also critical for these species. Spring burns will kill adult prairie mole crickets that have emerged for breeding and kill emerging Regal fritillary larvae. The best time to burn to avoid killing these insects is early fall.

- If grazing occurs, implement a patch burn grazing system. If this is not possible, a prescribed grazing system should be used to maintain the existing native plant community. A patch burn grazing system will mimic the combination of fire and nomadic grazing that once occurred on presettlement prairie. Patch burn grazing creates a mosaic of heavily grazed and lightly grazed areas that provide a diverse vegetative structure and increase plant diversity in the same grazing unit.
- Regal Fritillary larvae feed mainly on prairie violet. Management activities which encourage prairie violet, such as fescue eradication with grass specific herbicides are best. Summer or fall burning can be used to discourage grass dominance of a prairie.
- Management also includes active human intervention such as domestic grazing, mowing, and haying as well as manual, biological, and chemical means of selectively removing undesirable species.
- Passive techniques include monitoring sites that do not require intervention, fencing, and providing buffer areas devoid of invasive species.
- Where important, native ecotype prairie grasses and a good variety of forbs can be planted to enhance the biological value and diversity of existing adjacent remnant tracts. To provide the best opportunities for increasing prairie insects, plant the most diverse mix of forbs possible. The more diverse the forb mix the more diverse the insect population. Plantings for the Regal Fritillary butterfly must contain prairie violets in order to have a positive impact on this butterfly
- Management to control competing woody growth is essential for maintaining or increasing populations of some prairie plants. To control woody growth, trees and shrubs should be cut when carbohydrate reserves are lowest (before July 1st). Avoid treating all acres in any given year as woody cover control often requires the use of heavy machinery. Avoid impacting greater than 75% of the practice acres annually. The long-term benefits of tree removal seem to outweigh short-term disturbance. Cut stumps should be immediately treated with herbicides to prevent resprouting.
- If the prairie will be hayed, cut between July 15th and August 15th to maintain plant diversity and vigor. Avoid second cuttings or grazing a prairie after haying. Avoid haying annually after August 15th as cutting at this time will eventually change stand composition of the prairie. Cutting heights on prairies should be a minimum of 3" to 4". If possible, hay only one half of the prairie acres annually, leaving the other half idle for wildlife habitat. The following year, hay the idled half.
- Fertilizing a prairie will increase production, but better returns can be expected by modifying cutting heights and haying dates. Apply fertilizer in May when warm-season grasses are 4 to 6 inches tall. Prairies should only be fertilized when used in conjunction with spring prescribed burns to control introduced cool-season grasses. Applying lime, phosphorus and potassium may improve forb diversity and production. Choose fertilizer blends with the lowest percentage of nitrogen available.
- Avoid the use of insecticides on or near native prairie remnants.
- Avoid the use of nonselective herbicides or broadcast applications of herbicides on or near native prairie remnants.
- Avoid establishing invasive vegetation~~,~~ on prairie remnants or nearby where it could spread into the native plant community, and degrade or destroy habitat for prairie insects.
- Control invasive species in prairies and prairie planting with spot spraying or selective herbicides to maintain plant diversity

Information Contacts

Missouri Department of Conservation
Policy Coordination Section
P.O. Box 180
2901 W. Truman Blvd
Jefferson City, MO 65102-0180
Telephone: 573-751-4115
http://www.mdc.mo.gov/nathis/endangered/

U.S. Fish and Wildlife Service
Ecological Services Field Office
101 Park DeVille Dr., Suite A
Columbia, MO 65203
Telephone: 573-234-2132
http://www.fws.gov/midwest/partners/missouri.html

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Legal

The Missouri Department of Conservation prepared these guidelines for conservation practices with assistance from other state agencies, contractors, and others to provide guidance to those people who wish to voluntarily act to protect wildlife and habitat.

Compliance with these management guidelines is not required by the Missouri wildlife and forestry law or by any regulation of the Missouri Conservation Commission. Other federal, state or local laws may affect construction practices.

"State Endangered Status" is determined by the Missouri Conservation Commission under constitutional authority, and specific requirements for impacts to such species are expressed in the Missouri Wildlife Code, rule 3 CSR 10-4.111.

Species listed under the Federal Endangered Species Act must be considered in projects receiving federal funds or requiring permits under the Clean Water Act, with compliance issues resolved in consultation with the U.S. Fish and Wildlife Service.